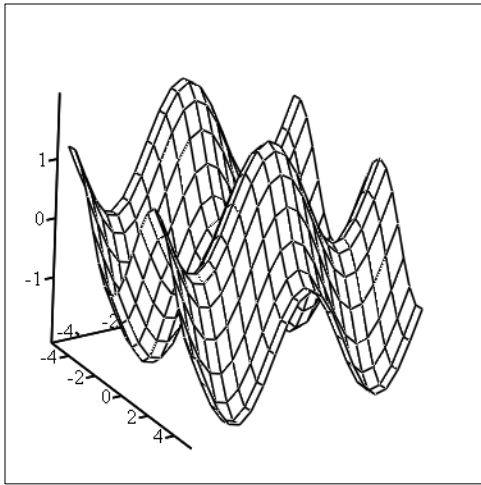
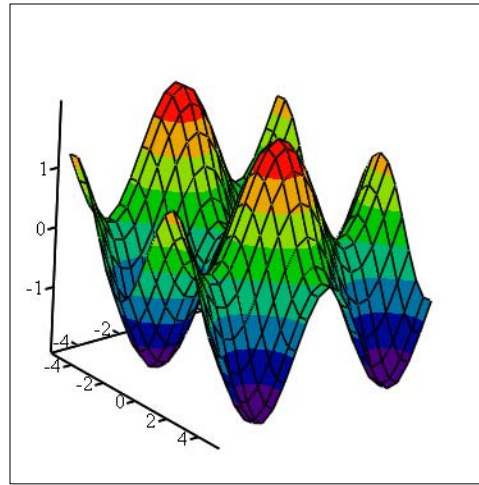


Enter math model for generating surface

$$f(x,y) := \sin(x) + \cos(y)$$



f



f



ORIGIN = 0

```
gen_tris(mat) := | idx ← 0
                  | for i ∈ 0 .. rows(mat) - 2
                  |   for j ∈ 0 .. cols(mat) - 2
                  |     pts_idx,0 ← i
                  |     pts_idx,1 ← j
                  |     pts_idx,2 ← mat_i,j
                  |     pts_idx+1,0 ← i + 1
                  |     pts_idx+1,1 ← j
                  |     pts_idx+1,2 ← mat_i+1,j
                  |     pts_idx+2,0 ← i + 1
                  |     pts_idx+2,1 ← j + 1
                  |     pts_idx+2,2 ← mat_i+1,j+1
                  |     pts_idx+3,0 ← i
                  |     pts_idx+3,1 ← j
                  |     pts_idx+3,2 ← mat_i,j
                  |     pts_idx+4,0 ← i
                  |     pts_idx+4,1 ← j + 1
                  |     pts_idx+4,2 ← mat_i,j+1
```

```

pts_idx+5,0 ← i + 1
pts_idx+5,1 ← j + 1
pts_idx+5,2 ← mat_{i+1,j+1}
idx ← idx + 6
return pts

```

```

gen_STL(mat) :=
  idx ← 1
  out_0 ← "solid Mathcad_Surface"
  for i ∈ 0, 3 .. rows(mat) - 1
    out_idx ← "facet normal 0.0 0.0 0.0"
    out_idx+1 ← "outer loop"
    out_idx+2 ← concat("vertex ", num2str(mat_{i,0}), " ", num2str(mat_{i,1}), " ", num2str(mat_{i,2}))
    out_idx+3 ← concat("vertex ", num2str(mat_{i+1,0}), " ", num2str(mat_{i+1,1}), " ", num2str(mat_{i+1,2}))
    out_idx+4 ← concat("vertex ", num2str(mat_{i+2,0}), " ", num2str(mat_{i+2,1}), " ", num2str(mat_{i+2,2}))
    out_idx+5 ← "endloop"
    out_idx+6 ← "endfacet"
    idx ← idx + 7
  out_idx ← "endsolid Mathcad_Surface"
  return out

```

```

WRITEFILE(File, Matrix) :=
  n ← 0
  c ← cols(Matrix)
  OUT ← (999)
  for x ∈ MatrixT
    x ← "" if IsNaN(x)
    if ¬IsString(x)
      x ← num2str(x)
      p ← search(x, ",", 0)
      x ← concat(substr(x, 0, p), ".", substr(x, p + 1, strlen(x))) if p ≥ 0
    OUT ← stack(OUT, str2vec(x))
  OUT ← stack[OUT, (9)]
  n ← n + 1
  if mod(n, c) = 0
    OUT ← submatrix(OUT, ORIGIN, last(OUT) - 1, ORIGIN, ORIGIN)
    OUT ← stack[OUT, (13)]
    OUT ← stack[OUT, (10)]
  out ← submatrix(OUT, ORIGIN + 1, last(OUT) - 2, ORIGIN, ORIGIN)
  WRITEBIN(File, "byte", 0, out)

```



```
mat := matrix(10,10,f)
```

```
new_mat := gen_tris(mat)
```

```
STL := gen_STL(new_mat)
```

```
z := WRITEFILE("c:\mathcad_mesh.stl",STL)
```